

unlike with rotavirus. Outbreaks of diarrhoea caused by group F adenoviruses have, however, occurred among young children in closed communities.^{2 7 13}

In the developed world, after rotaviruses, group F adenoviruses are the most common viruses associated with infantile gastroenteritis and are detected in between 4%¹¹ and 8%³ of stools from children with diarrhoea. Seroepidemiology shows that they are common throughout the world,¹⁴ but their importance in developing countries is not clear. One study from Brazil showed that they are present in only 2% of children with diarrhoea.¹⁵

Infection with group F adenovirus can be presumptively diagnosed when adenovirus is seen in stool specimens by electron microscopy but the virus fails to grow in conventional cultures. Adenoviruses from other groups may also fail to grow,³ however, which makes this criterion unreliable as well as retrospective. Immunoassays have been developed¹⁶⁻¹⁸ to identify specifically group F adenoviruses in stools, and with the development of monoclonal antibodies to such viruses^{19 20} such tests should become more widely available.

In conclusion, two adenovirus serotypes (types 40 and 41) are an important cause of diarrhoea in young children. Many other adenovirus serotypes are also shed in faeces and are sometimes detected in diarrhoeic stools but are not proved causal agents. There is therefore a clear need for definitive tests for group F adenoviruses to allow accurate diagnosis of adenovirus gastroenteritis.

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The downs and ups of infant mortality

The death rates of young children are, in my opinion, among the most important studies in sanitary science. In the first place, their tender young lives, as compared with the more hardened and acclimatised lives of the adult population, furnish a very sensitive test of sanitary circumstances; so that differences of the infantile death rate are, under certain qualifications, the best proof of differences of household condition in any number of compared districts. And secondly, those places where infants are most apt to die are necessarily the places where survivors are most apt to be sickly. . . .¹

JOHN SIMON, 1858

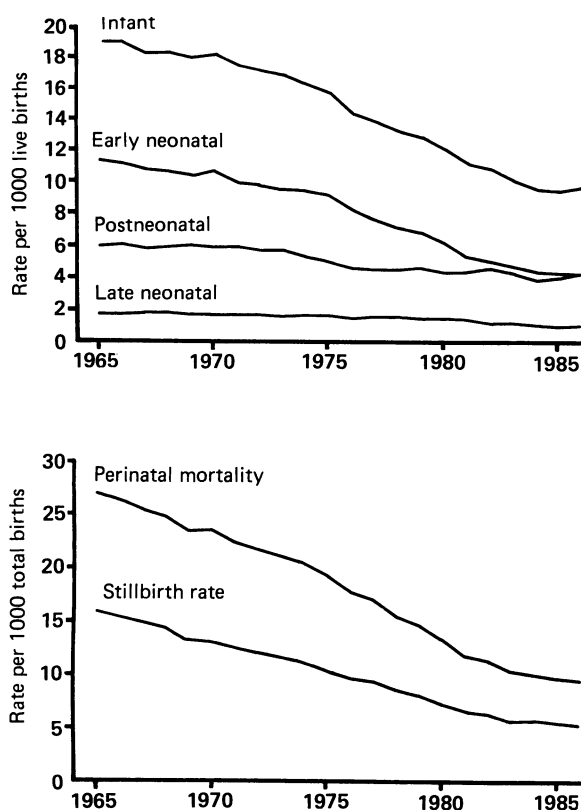
Infant mortality has long been regarded as a sensitive indicator of the state of the population's health. News of the rise in the infant mortality rate (mortality under one year after live birth) for England and Wales from 9.4 for every 1000 live births in 1985 to 9.6 in 1986 was announced by the Office of Population Censuses and Surveys on December 15² but emerged only slowly into the public and political consciousness. The rise provoked varied responses, ranging from the suggestion that "it may well be that it is a statistical error"³ to talk of a link with the plight of children awaiting cardiac operations and the financial problems of the Hospital for Sick Children at Great Ormond Street.⁴

It is ironic that the accuracy of the infant mortality rate should be questioned. Although they are not without problems, birth and death registration data are probably more reliable than the statistics about National Health Service activity⁵ that are so often quoted by politicians "backwards and forwards like tennis balls,"⁶ and, unlike these statistics, they are related to defined populations.⁷

The figure shows the infant and perinatal (stillbirths plus mortality in the first week after live birth) mortality rates together with the components into which they are commonly divided. The rates for 1986 were not a bolt from the blue but a continuation of trends already apparent from preceding years. By 1985 early neonatal mortality (mortality in the first week after live birth) was no longer falling as rapidly as in the late 1970s and early 1980s, and the same pattern can be seen in the stillbirth rate. As a result perinatal mortality, which fell by an average of 8.0% annually between 1975 and 1983, fell by only 3.0% in 1984, 3.2% in 1985, and 2.1% in 1986. In contrast, the postneonatal mortality rate (mortality over 1 month of age but under 1 year) remained static apart from minor fluctuations between 1976 and 1982 and then fell in 1983 and 1984. Although the small rise that followed in 1985 was unremarkable in itself, it meant that the larger rise in 1986 was not entirely unexpected.

Last time the infant mortality rate went up, in 1970, the picture was different: the rise occurred in the early neonatal period. Subsequent analysis showed that the high mortality was largely concentrated in the second quarter of 1970.⁸ It was suggested that the severe influenza epidemic in late 1969 and early 1970 may have adversely affected women in the first trimester of pregnancy and thus led to an increased incidence of low birthweight⁹ and mortality⁸ in their babies.

There is also little parallel with the rise in perinatal mortality in Wales in 1981. This increase, which led to a major inquiry,¹⁰ followed an exceptionally low rate in 1980. The rate for 1982 was, however, in line with the downward trend seen in the late 1970s. As Wales is about the same size as an average English NHS region its infant and perinatal



Deaths in the first year of life and perinatal mortality and stillbirth rates, England and Wales 1965-86.

mortality rates are based on many fewer deaths than the rates for England and Wales as a whole and thus are much more prone to yearly fluctuations.

This applies also to Scotland, where total births each year are around a tenth of those in England and Wales. In 1986 the trends in Scotland were the reverse of those in England and Wales, showing a rise in perinatal mortality and a fall in mortality in the rest of the first year of life. The Chief Medical Officer's report commented, "The overall downward trend continues, although at these relatively low rates year to year fluctuations may be observed."¹¹ Closer inspection showed, however, that the upward fluctuation in perinatal mortality was confined to multiple births and also that the twinning rate had increased in 1986.¹²

It is premature to look for specific reasons why post-neonatal mortality rose in England and Wales in 1985 and 1986 after falling in 1983 and 1984. So far only the overall mortality rates have been published, and we must await tabulations by factors such as certified cause of death, social class, and mothers' country of birth and analyses by season of birth and death. In the light of the Scottish experience we should also take account of the rise in the incidence of multiple births,^{13 14} which was particularly steep in 1986. It is also wise to allow statistically for the fact that many babies who die in the postneonatal period in a given year were born in the previous year so that the conventional denominators are not wholly right.^{5 15}

It is not too soon, however, to make some general points. While socioeconomic circumstances may affect mortality at all stages during the first year of life, early neonatal mortality is also closely linked to the quality of maternity and neonatal care. Whether the slowing down of the fall in mortality in this age group reflects pressure on the maternity services or whether the potential for further reduction through improv-

ing maternity care is now limited is not clear. Interpreting statistics for this age group has become more difficult because of the increasing tendency for very tiny babies, who in the past would have been regarded as miscarriages, to be given intensive care. As a result they are now also included in registration and notification statistics.¹⁶

Internationally countries with lower perinatal and infant mortality rates than ours tend to have a lower proportion of low birthweight babies and a lower incidence of lethal congenital malformations. There is a strong association between adverse socioeconomic conditions and both low birthweight and some lethal malformations.⁵

In contrast, although mortality in the postneonatal period possibly includes an increasing number of babies who die after long periods of neonatal care, postneonatal mortality is much more a reflection of parents' wider social and economic circumstances.¹⁷ Thus the rise in infant mortality in 1986 is more likely to be associated with public health problems than with the distressing waits for paediatric operations. Once death registration data have been thoroughly analysed, we may have to ask about the impact on babies' health of poor housing conditions, low pay, and unemployment. Although caution is essential when interpreting statistics and asking these questions, there are no grounds for complacency.

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Acheson: a missed opportunity for the new public health

The reason for establishing the Acheson committee's inquiry into public health in England was the failure to respond adequately to two major outbreaks of communicable disease. The committee immediately saw that behind these failures lay a broader crisis in the practice of public health by community physicians. Many of its practitioners had been unable to adapt effectively to the new era of public health with its much greater emphasis on promoting good health